



Third West Weekly Report Shepherd, Michael

to:

Joyce Ackerman, 'Craig Barnitz (cbamitz@utah.gov)' 02/28/2012 11:32 AM

Hide Details

From: "Shepherd, Michael" < Michael. Shepherd@PacifiCorp.com>

To: Joyce Ackerman/R8/USEPA/US@EPA, "'Craig Bamitz (cbamitz@utah.gov)'" <cbamitz@utah.gov>

#### 7 Attachments











Weekly Report 2-20 to 02-24-12.pdf Third West Weekly Log - 2012-08.pdf 230171-1.pdf 230254-1.pdf 230328-1.pdf





230398-1.pdf 230511-1.pdf

Joyce & Craig,

Attached are the reports for the week of February 20, 2012.

We had positive hits of chrysotile on Tuesday and Thursday last week.

Please let me know if you have any questions.

Thanks,

Mike Shepherd
Project Manager
Rocky Mountain Power - Major Projects
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## 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

# **HEALTH SAFETY MANAGER (HSM)**

#### DAILY CHECKLIST

	BINDI CHECKES-
DATE:	2/20/12
<u>General</u>	
<u>General</u>	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior
• • •	to commencement of any site work. Instruction, review hazards, health & safety issues
NA	and any modifications to the CSHASP Site hazard and safety instruction for all first time employees, contractors or visitors
NA .	Complete Employee Meeting Record Form B (where applicable
NA NA	
	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA	Confirm return of waste material manifest documents for each load with site
NA	
NA	manager.  Complete all CSHASP Forms (for applicable activities planned for that day)
NA NA	Illness/Injury Report Form A
NA NA	Site-Specific Training Record Form C
NA NA	Hot Work Permit Form D
NA NA	Trench/Evacuation Permit Form E
NA NA	Combined Space Entry Permit From F
NA NA	Exclusion zone operations are practiced as instructed.
NA	NA Decontamination unit is working properly.
	NA Workers are using decontamination unit as instructed.
	NA Workers use personal protective equipment properly.
	workers use personal protective equipment property.
$\square$	Set air samples at cardinal compass points around exclusion zone. Check
	throughout the day to ensure proper operation.
◩	Observe control measures for dust and figitive materials i.e. watering excavation sites and
	track out prevention.
v	Review sign-in/sign-out log throughout and at the end of the workday.
☑	Secure the site at the end of the workday; PacifiCorp Employee
<u>Sampling</u>	g \
NT A	Soil Confirmation compline for any name or average and
NA NA	Soil Confirmation sampling for any newly excavated areas
NA	Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusions zone
NT A	
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil
NI A	removal  Digitally what a graph cosh comple leastion and at any place field compling personnel
NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary





NA	Electronically file photo files into the on-site database
$\square$	Complete Field Documentation
M	Field Sample Data Sheets (FSDS)
$\square$	Logbook
NA	On-site computer database
$\square$	Label each sample media with a unique number
$\square$	Seal sample(s) in zip lock plastic bags
$\square$	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
Ø	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
Ø	Review and disseminate sample results as received from the laboratories to Project
	Manager and other appropriate managers and employees
NA	Electronically file sample reports into on-site database



### **3rd West Substation Site Project Safety Audit**

Project:	3rd West Sub Station	Date:	2/20/12
Location:	3rd West, 1st South, SLC	Job Number:	
<b>Survey Conducted By:</b>	Jon Craig	Title:	IH Technician

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.	X			×
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	х			
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.	х			
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.	x			
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.	x			-
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.	х			
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	,
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.	x			
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	х			
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.		5	x	
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½" fire resistance barrier.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.		-	х	-
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			х	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			х	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			х	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.	x			

CVE has both a fabrication and a line crew active on the site. The line crew is hanging steel structures. Fabricators are working on forming stems stems.

Newman was back filling around the west transformer and the vaults in the northern portion of the site. Exclusion Zone was active today around northern vaults and the west portion of the site. At mid-day, the northern section deactivated after all contaminated soil was capped with clean fill.





# 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

# **HEALTH SAFETY MANAGER (HSM)**

		DAILY CHECKLIST
DAT	E:	02/21/11
C	<u>Seneral</u>	•
		area Health and Safety Inspection
	IA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
1	12 1	activities for the day
Ņ	<b>IA</b>	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
N	<b>IA</b>	Site hazard and safety instruction for all first time employees, contractors or visitors
N	<b>IA</b>	Complete Employee Meeting Record Form B (where applicable)
N	<b>IA</b>	Document required Respirator Training completion with Form H
NA		Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA		Confirm return of waste material manifest documents for each load with site manager.
NA	Comnl	ete all CSHASP Forms (for applicable activities planned for that day)
- \	NA	Illness/Injury Report Form A
	NA	Site-Specific Training Record Form C
	NA	Hot Work Permit Form D
	NA	Trench/Evacuation Permit Form E
	NA	Combined Space Entry Permit From F
	$\square$	Exclusion zone operations are practiced as instructed.
		Decontamination unit is working properly.
		Workers are using decontamination unit as instructed.
		✓ Workers are using decontamination unit as instructed. ✓ Workers use personal protective equipment properly.
6	<b>Z</b>	Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
		Observe control measures for dust and fugitive materials i.e. watering excavation
	<b>Z</b>	sites and track out prevention.
	7	Review sign-in/sign-out log throughout and at the end of the workday.  Secure the site at the end of the workday
<u>S</u>	Sampling	
NA	Soil C	onfirmation sampling for any newly excavated areas
Ø		Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
ľ	NA ,	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
N	NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary





		Electronically file photo files into the on-site database
		Complete Field Documentation
	$\square$	Field Sample Data Sheets (FSDS)
	abla	Logbook
	$\square$	On-site computer database
		Label each sample media with a unique number
		Seal sample(s) in zip lock plastic bags
Ø	•	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
$\square$		Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
		Review and disseminate sample results as received from the laboratories to Project
		Manager and other appropriate managers and employees
<b>7</b>		Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 02/21/12
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: Justin Kargis	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			х	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			6
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	8
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.		4	x	
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			x	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	×
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	х			¥
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.	я		Х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	x			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.	747		x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

Exclusion zone activated once excavations began.

Exclusion zone has been extended to include the north arm of the yard.

Newman began digging out areas for duct banks in north arm. Native soil is being moved over to the area of the old switch gear where it is held until they continue hauling off site. They also worked on setting conduit between vaults.

CVE fabricators worked on forming stems south of 2<sup>nd</sup> transformer pad.

CVE electricians continued working panel wiring in control building.

Weather was mostly sunny with highs in the low 40s. No precipitation.





## 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

# **HEALTH SAFETY MANAGER (HSM)**

#### DAILY CHECKLIST

		DAIL I CHECKLIST
ATE	::	02/22/11
C	امسمسا	
	eneral Work	area Health and Safety Inspection
NA NA		Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
142	1	activities for the day
N/		Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior
. 142	1	to commencement of any site work. Instruction, review hazards, health & safety issues
		and any modifications to the CSHASP
N/	4	Site hazard and safety instruction for all first time employees, contractors or visitors
NA NA		Complete Employee Meeting Record Form B (where applicable)
N		Document required Respirator Training completion with Form H
JA	•	Record times and numbers of dump trucks and trailers as they leave the site with
12.8		contaminated material.
ΙĀ		Confirm return of waste material manifest documents for each load with site
		manager.
NΑ	Comp	lete all CSHASP Forms (for applicable activities planned for that day)
	NA .	Illness/Injury Report Form A
	NA	Site-Specific Training Record Form C
	NA	Hot Work Permit Form D
	NA	Trench/Evacuation Permit Form E
	NA	Combined Space Entry Permit From F
		Exclusion zone operations are practiced as instructed.
		☐ Decontamination unit is working properly.
	٠	✓ Workers are using decontamination unit as instructed.
		☑ Workers use personal protective equipment properly.
Ø		Set air samples at cardinal compass points around exclusion zone. Check
		throughout the day to ensure proper operation.
		Observe control measures for dust and fugitive materials i.e. watering excavation
		sites and track out prevention.
		Review sign-in/sign-out log throughout and at the end of the workday.
		Secure the site at the end of the workday
0		
<u>Sa</u>	mpling	
٧A	Soil C	onfirmation sampling for any newly excavated areas
<b>7</b>		Stationary Air Monitoring during contaminated soil removal around the perimeter of the
		exclusion zone
N.	A	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil
	_	removal
N.	A	Digitally photograph each sample location and at any place field sampling personnel
		determined necessary





$\square$	Electronically file photo files into the on-site database
Ø	Complete Field Documentation
$\square$	Field Sample Data Sheets (FSDS)
$\square$	Logbook
$\square$	On-site computer database
	Label each sample media with a unique number
abla	Seal sample(s) in zip lock plastic bags
Ø	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
$\square$	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
$\square$	Review and disseminate sample results as received from the laboratories to Project
	Manager and other appropriate managers and employees
$\square$	Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 02/22/12
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By:	Title:

Standard	Title	☐ In Compliance	Out of Compliance	D N/A	Corrective Action Taken and Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.	43		х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.		20	х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	· · · · · · · · · · · · · · · · · · ·
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.	٠		х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.	3		x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			, &

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Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	,
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.		s	х	
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	х			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.		.74	Х	
1926,405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			X	e
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			a
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	x			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

Exclusion zone activated once excavations began.

Newman continued excavating areas for duct banks. They also delivered several loads of backfill material that were placed at the south end of the yard.

CVE fabricators continued forming stem structures.

CVE electricians continued wiring work in the control building.

CVE line crew departed site by 9:30 due to inability to mount structural steel on stem structures. Weather was warm and mostly sunny with highs in the upper 50s. Very slight winds and no precipitation.



NA

determined necessary



## 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

## **HEALTH SAFETY MANAGER (HSM)**

#### DAILY CHECKLIST

		DAILT CHECKLIST
DAT:	E:	02/23/11
G	<u>eneral</u>	
_		area Health and Safety Inspection
	A WOIR	Review and innecessary update Activity Hazard Analyses (AHA) based on planned site
		activities for the day
N	<b>A</b>	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
N	Α	Site hazard and safety instruction for all first time employees, contractors or visitors
	A	Complete Employee Meeting Record Form B (where applicable)
N		Document required Respirator Training completion with Form H
NA		Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA		Confirm return of waste material manifest documents for each load with site
		manager.
NA	Compl	lete all CSHASP Forms (for applicable activities planned for that day)
	NA .	Illness/Injury Report Form A
	NA	Site-Specific Training Record Form C
	NA	Hot Work Permit Form D
	NA	Trench/Evacuation Permit Form E
	NA	Combined Space Entry Permit From F
		Exclusion zone operations are practiced as instructed.
		Decontamination unit is working properly.
		☑ Workers are using decontamination unit as instructed.
		☑ Workers use personal protective equipment properly.
✓	1	Set air samples at cardinal compass points around exclusion zone. Check
		throughout the day to ensure proper operation.
		Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
₹	7	Review sign-in/sign-out log throughout and at the end of the workday.
V		Secure the site at the end of the workday
<u>S</u>	am <b>p</b> ling	
B.T.A	0-11-0	
NA ☑	Soil C	onfirmation sampling for any newly excavated areas  Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
N	A	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil

Digitally photograph each sample location and at any place field sampling personnel





☑	Electronically file photo files into the on-site database
$\overline{\mathbf{Q}}$	Complete Field Documentation
•	✓ Field Sample Data Sheets (FSDS)
[	☑ Logbook
1	✓ On-site computer database
₹ .	Label each sample media with a unique number
	Seal sample(s) in zip lock plastic bags
	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
	Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
$\square$	Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 02/23/12			
Location: 3rd West, 1st South, SLC	Job Number:			
Survey Conducted By:	Title:			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			х	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	,
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

Standard	Title	In Compliance	Out of Compliance	D N/A	Corrective Action Taken and Date
Stuntuuru	Excavation protective systems; examination by			x	Dute
1926.652 (a) (1)	competent person when less than 5 feet in depth.			^	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			x	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	* .
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			х	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	¥
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	9 9
1926.102 (a) (1)	Eye and face protection shall be provided.	х	з		
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	х			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	х			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	2		х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	9

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	х			e e
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

Exclusion zone activated once excavations began.

EZ fencing had been blown over by winds overnight.

Newman continued excavating areas for duct banks. They also delivered several loads of backfill material that were placed at the south end of the yard.

CVE fabricators continued forming stem structures.

CVE electricians continued wiring work in the control building.

CVE line crew loaded up structural steel pillars to be transported for re-boring of anchor bolt holes.

Weather was cool, dry, and mostly sunny with highs in the mid 30s. Very slight winds and no precipitation.



NA

NA

exclusion zone

determined necessary



### 3<sup>RD</sup> WEST SUBSTATION REMEDIATION PROJECT

### **HEALTH SAFETY MANAGER (HSM)**

#### **DAILY CHECKLIST**

DATE:	02/24/11
Gen	eral
	Vork area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors price to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable)
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA	Confirm return of waste material manifest documents for each load with site manager.
NA (	complete all CSHASP Forms (for applicable activities planned for that day)
I	IA Illness/Injury Report Form A
I	IA Site-Specific Training Record Form C
I	IA Hot Work Permit Form D
. 1	Trench/Evacuation Permit Form E
I	IA Combined Space Entry Permit From F
[	Exclusion zone operations are practiced as instructed.
	☐ Decontamination unit is working properly.
	☑ Workers are using decontamination unit as instructed.
	☑ Workers use personal protective equipment properly.
Ø	Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
	Observe control measures for dust and fligitive materials i.e. watering excavation sites and track out prevention.
V V	Review sign-in/sign-out log throughout and at the end of the workday.  Secure the site at the end of the workday
Sam	pling
NA :	oil Confirmation sampling for any newly excavated areas

Stationary Air Monitoring during contaminated soil removal around the perimeter of the

Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil

Digitally photograph each sample location and at any place field sampling personnel





<b></b> ✓	Electronically file photo files into the on-site database
Ø	Complete Field Documentation
☑ .	Field Sample Data Sheets (FSDS)
☑	Logbook
$\square$	On-site computer database
$\overline{\mathbf{v}}$	Label each sample media with a unique number
$\overline{\mathbf{v}}$	Seal sample(s) in zip lock plastic bags
☑	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
☑	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
Ø	Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
$\square$	Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 02/24/12		
Location: 3rd West, 1st South, SLC	Job Number:		
Survey Conducted By:	Title:		

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			×	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	-
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	×
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	2
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	×
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			х	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			х	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			x	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			ed
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			X	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			*
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			,
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x		2	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	,
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	x			*
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.		,	х	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

No exclusion zone work done today.

Newman workers did temporarily enter the area with exposed native soil to perform equipment maintenance.

CVE fabricators poured stem structures on spread footings in area south of 2<sup>nd</sup> transformer.

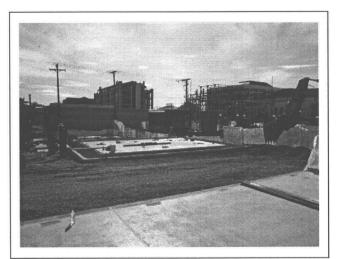
CVE electricians worked on wiring panels for circuit breakers.



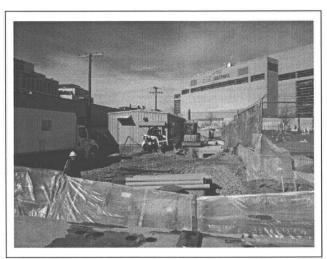
РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

## R & R Environmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:

SCALE:

REVIEWED BY:
DCR

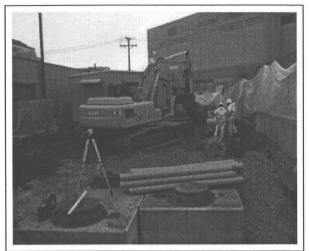
CREATED BY:
JRWC

DATE:
2/20/2012

FILE:

SITE PHOTOGRAPHS

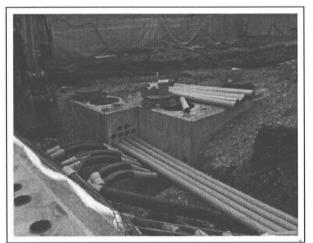




РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 02/21/12	FILE:	

SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3

## R & REnvironmental, Inc.

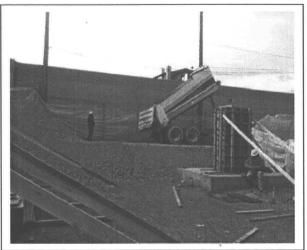
47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

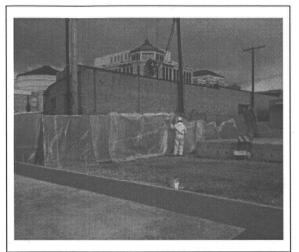
DESIGNED BY:	SCALE:	DCR	
DRAWN BY: JMK	DATE 02/22/12	FILE:	

SITE PHOTOGRAPHS

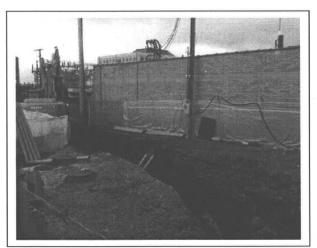




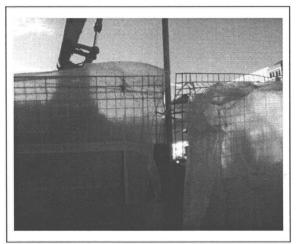
РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

# R & REnvironmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

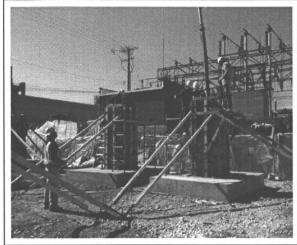
DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 02/23/12	FILE:	

SITE PHOTOGRAPHS





РНОТО 1



**PHOTO 2** 

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 02/24/12	FILE:	

SITE PHOTOGRAPHS



PROJECT NAME:	T NAME: Third West Sub - Rebuild			DATE: Monday, February 20, 2012			
PO & Work Order NO. :		3000078050	/ 10035803	MAIN CONT	MAIN CONTRACTOR		y Electric
Crew Start Time:	7:0	0	Crew Stop Time:	17:15	5	Tot Hrs mns:	10:15
FCR Start Time:	6:4		FCR Stop Time:	17:30	)	Tot Hrs mns:	10:42
Use mi/itary time format 00:00			TOR Grop Time.				10.12
Ose minuary time tormat 00:00	,						
WEATHER CONDITIONS:	_		Partly Cloudy, 23 degre	ees in AM - Clou	dy, 40 deg	rees in PM	
DESCRIPTION: (work perf	ormed	general comi	ments instructions to	contractor # c	of crew me	embers onsite	1
R&R set up four monitors. New transformer and had a sub com the site, received a steel deliver footings and built templates for R&R = 1, Wilding = 1.	e in to co y of colu	ore-drill 6" holes mns and beams	in Vaults 4 and 5. CVE	Electrical crew wire tts. CVE Fab Cre	ed panels. ( w started for	CVE Line Crew I	mobilized to ht spread
IF WORKING IN ENERGIZE	D SUB	STATION:					
Dispatcher login, name and time	e: J	im Bowman 064	18				
Dispatcher logout, name and tir	ne: J	im Bowman 172	29				
DISCREPANCIES:				IMMEDIATE C			
2/20 - Identified possibile issue With piate hole size issue	bolt proje	ection for "G" and '	"E" foundations, and base	Sent e-mail to Mike	Shepherd. [	Discussed with Sci	ott Collard.
11/30 - Identified an additional retai	ning wall t	that is below grade	e and does not show on the	Will excavate to de	tennine dime	nsions.	
	,						
12/15 - Excavated to locate the 46 ldidn't find them. Will try again. Act DELAYS OR LOST TIME E	ual deoth	will be much deep		Sent e-mail to Rog	er F.		
EQUIPMENT (working, del			ilor concy oversion acres	1000 (2) to al trail	r orouge dressel.	(2) hoom to lok &	loumos:
CVE fab crew: Portable toilet (2), for trachoe (3), loader, bobcat, mini-ex		•		onex, (2), tool traile	er, crew truck	(2), boom truck. In	newman:
OSHA Recordable Safety I	ncident	ts:			Reported	by:	Time:
		<del></del>					
			<del></del>	_			



PROJECT NAME:	Thir	d West Sub - Rebuild	DATE:	Tuesday	y, Feb <b>r</b> uary 2	1, 2012
PO & Work Order NO. :	300	0078050 / 10035803	MAIN CONT	RACTOR:	Cache Valle	y Electric
Crew Start Time:	7:00	Crew Stop Time	: 17:19	5 1	Fot Hrs mns:	10:15
FCR Start Time:	6:55	FCR Stop Time	: 17:19	5	Fot Hrs mns:	10:20
Use military time format 00:					•	
, , , , , , , , , , , , , , , , , , , ,		•				•
WEATHER CONDITIONS	•	Cloudy, 34 degree	es in <b>AM</b> - Rainy,	40 degrees	in PM	
		eral comments, instructions to conduits from the switchgear to Vaul				
kV duct banks. Newman is sta contaminated materials at one able to set the column. Plan E	aging all spoils e. CVE Line C B tbd. CVE Fa oil containment	int bank trench from the 46 kV vault in the EZ until they are able to dem trew worked on enlarging the holes ab Crew completed foming of six of walls. They started installation of the CVE Fab Crew = 6, CVE Lines	olish the old control in the baseplates of the eight "E" found he grating supports	ol building and of the box struct ations and gro of the oil cor	then remove a cture columns, outed the form- ntainment. RIV	all of the but were not ty voids in IP Convn
IF WORKING IN ENERGIZ						
Dispatcher login, name and tir		y LuHaun 0655				<del></del>
Dispatcher logout, name and t	ime: Ken B	arto 1710	INTERIATE O	000E0TI		
DISCREPANCIES:	th halt avaigation	for "G" and "E" foundations, and base	Radha authorized			
plate hole size issue	in bolt projection	ioi G and E loundations, and base	in baseplates. Firs			-
11/30 - Identified an additional ret Demo Plan.	aining wall that is	below grade and does not show on the	Will excavate to de	etermine dimens	sions.	
	ctual depth will be	ig the west side of the yard. Dug 8' and e much deeper than design of new ban		er F.		
Issue with the tolerance of anchor	bolt size and hole. CVE attempted	les in the baseplates for the box structu d to ream the holes with a bore-hone, but				
EQUIPMENT (working, de	elivered, idle)	<u> ·</u>			<del></del>	
	forklift, 1 dumpst	ter, office trailer, conex, exclusion zone	conex, (2), tool traile	er, crew truck (2	), boom truck. N	lewman:
OSHA Recordable Safety	Incidents:		-	Reported b	y:	Time:



PROJECT NAME:	Third West Sub - Rebuild			DATE: Wednesday, February 22,				
PO & Work Order NO. :	300007805	0 / 10035803	MAIN CONT	RACTOR	Cache Valle	y Electric		
Crew Start Time:	7:00	Crew Stop Time:	17:25	i	Tot Hrs mns:	10:25		
FCR Start Time:	6:45	FCR Stop Time:	17:25		Tot Hrs mns:	10:40		
Use military time format 00:00		, = 1, = 1, ,			-			
<b>.</b>			•		•			
WEATHER CONDITIONS:		Cloudy, 35 degrees	in AM - Cloudy,	45 degree	s in PM			
DESCRIPTION: (work perfor								
R&R set up four monitors. Newmonth Newman delivered backfill material old control building and then remonal resolution is determined for the life forming the last two of the eight "Estems on Thursday. They complete Techs worked in the new control building = 1.	al into the south exca eve all of the contami baseplate issue. CV " foundations and sta eted the installation of	avation area. Newman is sinated materials at once. C' E thinks they have a reamenarted squaring up the forms of the grating supports for the	taging all spoils in VE Line Crew show solution for the bain preparation for e oil containment a	the EZ until wed up this aseplates. setting the a and placed t	they are able to morning but wer CVE Fab Crew anchor bolts and	demolish the nt home until completed pouring the Comm		
		•			•			
· ·								
IF WORKING IN ENERGIZED	SUBSTATION	<del></del> .						
Dispatcher login, name and time:	Manny LuHaur	0645						
Dispatcher logout, name and time								
DISCREPANCIES:	. [1111111111120	<u></u>	IMMEDIATE CO	ORRECTIV	/F ACTION TA	KEN:		
2/20 - Identified possibile issue with bo	olt projection for "G" an	nd "E" foundations, and base	CVE thinks they ha					
plate hole size issue			tiolt/baseplate issue					
11/30 - Identified an additional retainin Demo Plan.	g wall that is below gra	ade and does not show on the	Will excavate to det	ermine dime	nsions.			
Defilo Franc								
12/15 - Excavated to locate the 46 kV didn't find them. Will try again. Actua			Sent e-mail to Roge	er F.				
DELAYS OR LOST TIME ENG								
CVE Line Crew has pulled off the site	until the anchor bolt/ba	aseplate issue is resolved.						
·								
EQUIPMENT (working, delive	ered, idle):	<u> </u>						
CVE fab crew: Portable toilet (2), fbrk trachoe (4), loader, bobcat, mini-ex (2)	lift, 1 dumpster, office		onex, (2), tool traile	r, crew truck	(2), boom truck. N	lewman:		
			/					
OSHA Recordable Safety Inc	idents			Reported	hv:	I Time:		
Cond Recordable Safety IIIC	nucillo.	<del> </del>		reported	<del> </del>	<del></del> -		
<del> </del>								



PROJECT NAME:	Third We	est Sub - Rebuild	DATE: Thursday, February 23, 201				
PO & Work Order NO. :	3000078	8050 / 10035803	MAIN CONTRACTOR	: Cache Valle	y Electric		
Crew Start Time:	7:00	Crew Stop Time:	5:25 .	Tot Hrs mns:	22:25		
FCR Start Time:	6:45	FCR Stop Time:	5:30	Tot Hrs mns:	22:45		
Use military time format 00:00	0 .	•					
			•				
WEATHER CONDITIONS:		Partly Cloudy, Breezy -	28 degrees in AM; 40 deg	rees in PM			
DESCRIPTION: (work per							
R&R set up four monitors. New							
excavation will not interfere with yard and hauled in ABC for bac out the box structure columns for squared up foundations for an cleaned up the building.	kfilling of the sprea or shipping to a fab 11:00 <b>AM</b> pour on F	d footing area. CVE Line Crew shop that will ream out the bas	(two people) showed up this is eplate holes. CVE Fab Cre inpleted wiring of the panels in	morning long end w set anchor bold the new control	ough to load ts and building and		
·			•	•			
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	•			•	. 1		
L IF WORKING IN ENERGIZE	ED CLIBCTATION	M•	· · · · · · · · · · · · · · · · · · ·	<u> </u>			
Dispatcher login, name and tim							
Dispatcher logout, name and tir			<del></del>				
DISCREPANCIES:			IMMEDIATE CORRECTIV	VE ACTION TA	KEN:		
2/20 - Identified possibile issue With	bolt projection for "G	6" and "E" foundations, and base	Columns on site were hauled to				
plate hole size issue			reamed out.				
		•					
11/30 - Identified an additional reta Demo Plan.	ining wall that is below	w grade and does not show on the	Will excavate to determine dime	nsions.			
12/15 - Excavated to locate the 46 didn't find them. Will try again. Ac			Sent e-mail to Roger F.				
<b>DELAYS OR LOST TIME E</b>							
CVE Line Crew has pulled off the s	ite until the anchor bo	olt/baseplate issue is resolved.					
·							
·							
L			••				
EQUIPMENT (working, del			(2)	(0)			
trachoe (4), loader, bobcat, mini-ex		fice trailer, conex , exclusion zone of pactor, backhoe.	onex, (2), tool trailer, crew truck	(2), toom truck. N	ewman:		
·							
OSHA Recordable Safety	Incidents:		Reported	by:	Time:		
				· · ·			
· · · · · · · · · · · · · · · · · · ·				I			



PROJECT NAME:	Third West S	Sub - Rebuild	DATE : Frida	y, February 24,	, 2012
PO & Work Order NO. :	3000078050	/ 10035803	MAIN CONTRACTOR	: Cache Valle	y Electric
Crew Start Time:	7:00	Crew Stop Time:	16:10	Tot Hrs mns:	9:10
FCR Start Time:	6:45	FCR Stop Time:	16:15	Tot Hrs mns:	9:30
Use military time format 00:00	0.10	, or, otop ,or		-100111101111101	
, , , , , , , , , , , , , , , , , , , ,					
WEATHER CONDITIONS:		Sunny- 25 degrees	in AM, Sunny 45 degrees	in PM	
DESCRIPTION: (work perform					
R&R set up four monitors. Newma footings stripped, allowing Nevmar cyds of concrete in the spread foote Electrical Crew installed boxes and R&R = 1, Wilding = 1.	n to backfill the sout er stems ("E" fdns).	h excavation area. CVE Fa The first truck falled the air	ab Crew finalized anchor bolt	placement and poth air and slump	oured 24 p. CVE
	•	•	•		
_					
		•			
IF WORKING IN ENERGIZED	SUBSTATION:	<del></del>			
Dispatcher login, name and time:	Bany Nielson 0	645			
Dispatcher logout, name and time:	Ken Barto 1615				
DISCREPANCIES:			IMMEDIATE CORRECTIV		
2/20 - Identified possibile issue with bol plate hole size issue	t projection for "G" and	d "E" foundations, and base	Columns have been moved to fa holes.	b shop for reaming	of base plate
plate Hole Size Issue			TIOICO.		
11/30 - Identified an additional retaining	wall that is below gra	de and does not show on the	Will excavate to determine dime	nsions	
Demo Plan.			·		
12/15 - Excavated to locate the 46 kV of didn't find them. Will try again. Actual			Sent e-mail to Roger F.		
<b>DELAYS OR LOST TIME ENC</b>	OUNTERED:				
CVE Line Crew has pulled off the site u	intil the anchor bolt/ba	seplate issue is resolved.			
1					İ
<b>EQUIPMENT</b> (working, delive	red, idle):		··· <u></u>		
CVE fab crew: Portable toilet (2), forkli trachoe (4), loader, bobcat, mini-ex (2),	ft, 1 dumpster, office t		onex, (2), tool trailer, crew truck	(2), boom truck. N	lewman:
				-	
OSHA Recordable Safety Inci	idents:		Reported	by:	Time:
				T	
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			





February 22, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 230171-1 None Given

Project Description:

RMP - 3rd W. Sub

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 230171-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except In full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 230171-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description:

RMP - 3rd W. Sub

Date Samples Received:

February 21, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

February 22, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	ID N	umber	Analyzed	Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W0220-N	EM	867009	0.0700	1152	ND	0.0048	BAS	BAS
3W0220-S	EM	867010	0.0700	1152	ND	0.0048	BAS	BAS
3W0220-E	EM	867011	0.0700	1150	ND	0.0048	BAS	BAS
3W0220-W	EM	867012	0.0700	. 1150	ND	0.0048	BAS	BAS
Blank (Sample Not Labeled)	EM	86701 <b>3</b>	NA	0	NA		·	
Blank (Sample Not Labeled)	EM	867014	NA	0	NA			

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity

Effective Filter Area = 385 sq mm

Average Grid Opening in mm<sup>2</sup> = 0.010

DATA QA

Due Date:	3.33.13
Due Time:	240



Pager: 803-809-2096 INVOICE TO: (IF DIFFERENT) **CONTACT INFORMATION:** Company: ddrass: Celt/peger: rologt Number and/or P.O. # Final Data Delherable Ernaf Address Project Gescription/Location DAVEGREEN/CRO.COM ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm REQUESTED ANALYSIS VALID MATRIX CODES LAB NOTES: RUSH (Samo Day) PRIORITY (Next Day) STANDARD Air = ABulk = B (Rust PCM = 2hr, TEM = 6hr.) Paint = P Dust ≈ D CHEMISTRY LABORATORY HOURS: Weekdays: Sant - 5pm Soil = S Wipe = W \_\_\_RUSH \_\_\_ 24 hr. \_\_\_3-5 Day Metal(s) / Dust Swab = SW F ≈ Food \*\*Prior noutication is Quan RCRAS/Metals & Welding Drinking Water = DW | Waste Water = WW \_\_\_RUSH \_\_\_ 5 day \_\_\_10 day Point Count required for RUSN Fume Scan / TCLP ISO, +/-, ect Preps O = Other turnarounds.\*\* 24 hr. \_\_\_ 3 day \_\_\_ 5 Day Organics "ASTM E1792 approvad wipe media only" Š MICROBIOLOGY LABORATORY HOURS; Weekdays: 9am - 8pm E.coll O157:H7, Coliforms, S.aureus \_\_\_\_ 24 hr. \_\_\_ 2 Day 7400A, 7400B, OSHA Salmonella, Listeria, E.coll, APC, Y & M \_\_\_ 48 Hr. \_\_\_3-5 Day Mold RUSH \_\_24 Hr \_48 Hr \_\_3 Day S Day "Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional faci Sample Volume apply for afterhours, waskends and holidays." - AHERA, Matrix Code Special Instructions: EM Number (Labdratory Dale Time Use Only) Collected Collected Client sample ID humber (Sample ID's must be unique) Ø ,180 12 13 8 9 10 (Additional samples shall be listed on attached long form.) Number of samples received: NOTE: REI will analyze incoming samples based tiped between the control of the co analysis as indicated on this Chain of Custody shall ognistitute an analytical services agreement with payment terms of NET 30 days, failure to compty with payment terms may result in a 1.5% monthly itterest surcharge. 1 Z Date/Time: Relinguished By: Sample Condition: On Ice Sealed Intact Laboratory Use Only Temp. (F°) Yes / No Yes / No Yes / No Carrier: Received By Date/Time: Results: Contact Phone Email Fax Time Date Contact Time Initials Phone Email Fax Date Time Initials Contact Phone Etflail Fax Data Contact Time Initials Canf + 8675 J820 2020

7-2011 version 1

#### Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

#### Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

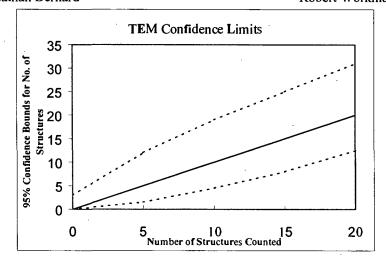
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	(Z0KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.058:um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RX
Sample Type (A=Alr, D=Dust):	A
Air volume (L) or dust area (cm2)	1152
Date received by lab	22/2
Lab Job Number	230(7)
Lab Sample Number	507009

F-Factor Calculation (Indirect Preps On	<u>y):</u>
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary Piter (ml)	

Analyzed by	JB
Analysis date	2/21/2
Method (D=Dlrect, l=Indirect, IA=Indirect, ashed)	D D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimensions		Identification Mineral Clas		dentification Mineral Class		eral Class			1 = yes, blank = no		
O.I.d	Ond Opening	Туре	Primary	Total	Length	Width	, identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS		
A	F3-1	M														
	E3-1	ND			R	20_	A 8	0/2 m Cm	f	5	10% Less	`S				
	C3-6	ND			P	η (	3 6	% of when	F	5-	o h dehr	i's_				
	B3-6	ND		<b>-</b>					·							
B	H5-3	ND						4	B 21	22/1	7					
	65-3	ND				) 				. /`		L				
	F5-3	NP														

#### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 OX (N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	PR
Sampla Tyoe (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1152
Data received by lab	2/2/2
Lab Job Number:	230 7
Lab Sampla Number:	\$67010

F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary litter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	·

Analyzed by	- 573
Analysis date	2/24/12
Method (D=Dlrect, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Ditner	sions	Identification	Mineral Class				1 = ye	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibote	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	15-4	ND						·						
	K5-4	ND												·
	H5-4	M			K	1,05	A413	~609	non	Len.	£ 5% d	shie		i
	65-4	ND				. '				1				
3	K4-6	ND							1	6	2/22/n			· · ·
	H4-6	M							//		/ /			
	64-6	M												

#### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	9.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

RX
A
150
2 21 2
230[7]
3070N

Analyzed by	20057/5 No.
Analysis date	2/21/12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	All
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):					
Fraction of primary filter used					
Total Resuspension Voluma (ml)					
Volume Applied to secondary filter (ml)					

Grid	Grid Opening	Structure	No. of St	ructures	Dimensions		Identification	Mineral Class				1 = y	es blank	= no
		Туре	Primary	Total	Length	Width		Amphibole		NAM	Sketch/Comments	Sketch	Photo	EDS
A	F4-3	ND						! !						
	E4-3	MD				Pro	OA	60/20	Lea	f	3-5%	lows		
	B4-6	VD				Ra	o B	50 % v	hus	4	1 1	ebu)		
	A4-6	ND					,							
B	F4-6	ND								B	2/22/12			
	E4-6	MD									/ / -			
	C4-10	M												
		,												

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 uni
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
QA Type	

Client :	eve :
Samole Type (A≖Air, D=Dust):	de A
Air volume (L) or dust area (cm2)	1150
Date received by lab	2 21 2
Lab Job Number:	23017
Lab Sample Numben	807017

Lab Sample Number	77.0
F-Factor Calculation (Indirect P	reps Only):
Fraction of primary filtar used	·
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	2/21/2
Method (O=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	sions	Identification	Mineral Class				1 = y	es, blank	= no
0.10	One opening	Туре	Primary	Total	Length	Width		Amphibole	С.	NAM	Sketch/Comments	Sketch	Photo	EDS
A	F3-6	W												
	E3-6	MD				) ap 1	70	The wife	F	5-	7 Lolehn	5		
	C3-6	ND			2	201	B 87	Dolow fr	4	5-	7 % debu	\$		
	133-6	MD							4					
LB	144-4	ND						4	2/	22/13				L
	64-4	ND								7				
	F4-4	MD											·	

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was erhployed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

**B**undle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed,  $mm^2 = \# GO \text{ counted } x \text{ Average } GO \text{ Area } (mm)$ 

Concentration, s/cc =  $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{A verage GO area (mm}^2)} \times \frac{1L}{1000\text{cc}}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



February 23, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 230254-1 None Given

Project Description:

3rd West Sub - RMP

Eldon Romney
R & R Environmental
47 West 9000 South #2
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 230254-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 121896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 230254-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP February 22, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

February 23, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter	
ID Number	ID N	D Number Analyzed		Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading	
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)	
3W-022112 S	EM	867453	0.0900	961	ND	0.0045	BAS	BAS	
3W-022112 W	EM	867454	0.0900	947	1	0.0045	0.0045	11.1	
3W-022112 N	EM	867455	0:1000	210	ND	0.0183	BAS	BAS	
3W-022112 E	EM	867456	0.0900	95 <b>2</b>	ND	0.0045	BAS	BAS	

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm<sup>2</sup> = 0.010 Effective Filter Area = 385 sq mm

DATA QA

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101890-0; TDH: #30-0015

#### TABLE II. SUMMARY OF ANALYTICAL DATA

RES Job Number:

RES 230254-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

February 22, 2012

Analysis Type:

**TEM, AHERA** 

Turnaround:

24 Hour

Date Samples Analyzed:

February 23, 2012

Client ID Number			Asbestos Mineral					Structures >5 Microns in Length	**Excluded Structures	Asbestos Structures for	
				Fibers	Bundles	Clusters	Matrices			Concentration	
3W-022112 S	ÉM	867453	ND	0	0	0	0	. 0	0	0	
3W-022112 W	EM	867454	Chrysotile	0	0	1	0	0	0	1	
3W-022112 N	EM	867455	ND	0	0	0	0	0	0	0	
3W-022112 F	FM	867456	ND	0	0	0	0	0	0	0	

<sup>\*</sup>See Analytical Procedure for definitions

<sup>\*\*</sup>C = Excluded from total due to lack of confirmation

<sup>\*\*</sup>L = Excluded from total for length less than 0.5 micron (AHERA only)

<sup>\*\*</sup>A = Excluded from total due to i ncorrect aspect ratio

ND = None Detected

Due Date: 2-3312 Due Time: 855

Phone Email Fax

Contact

Date

## Reservnirs Environmental, Inc. 8801 Logan St. Danvar, CO 80218 • Ph: 303 884-1985 • Fax 303-477-4278 • Tod Free : 595 RESI-ENV

Page

Pager: 303-509-2096 INVOICE TO: (IF DIFFERENT) CONTACT INFORMATION: Contact: Company: Phone: Addre m: 90005. #Z Fax. Sandy U1-8-1070 Cet/pager: Allpager: 80t 541-1035 Project Number and/or P.O. #: dave @ Menino, com Project Description/Location: 30 Sub- CMP West REQUESTED ANALYSIS **VALID MATRIX CODES** ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm LAB NOTES: RUSH (Same Day) X PRIORITY (Next Day) \_\_\_STANDARD Air = A Bulk = B (Rush PCM = 2hr, TEM = 6hr.) Paint = P Dust = D CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm Soll = S Wipe = W Metal(s) / Dust \_\_\_ RUSH \_\_\_ 24 hr, \_\_\_3-5 Day Swab = SW F = Food "Prior notification is RCRA 8 / Metals & Welding Drinking Water = DW | Waste Water = WW ş Long report, Point Count \_\_\_RUSH \_\_\_ 5 day \_\_\_10 day required for RUSH Fume Scan / TCLP O = Other tumarounds.\*\* 24 hr. \_\_\_ 3 day \_\_\_ 5 Day \*\*ASTM E1792 approved wipe media only\*\* MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm E.coli O157:H7, Coliforms, S.aureus \_\_\_ 24 hr. \_\_\_ 2 Day - 7400A, 7400B, OSHA Salmonella, Listeria, E.coli, APC, Y & M 48 Hr. \_\_\_3-5 Day Mold RUSH 24 Hr 48 Hr \_ 3 Day \_ \*Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional feet apply for afternours, weekends and holidays." # Containers Special Instructions: L) / Area EM Number (Laborator) Sample 1 Date Time Use Only) Collected Collected Client sample ID number (Sample ID's must be unique) MICROBIOLOGY hh/mm a/o 26 3W-022112S 2+ 22 6 8 9 10 Number of samples received: (Additional samples shall be listed on attached long form.) NOTE: REI will are alyze incoming samples based upon information received and will not be responsible for errors or omissions for equested arrahysis as indicated on this Chally-pt Custody shall constitute an arrahysical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest curcharge. Date/fims: 2 Relinquished By: Sample Condition: On Ice Sealed Intact Laboratory Use Only Temp. (F\*) Yes / No Yes/No Yes/No Date/Time: 22/2 @ 255th Carrier: Received By: Results: Ptione Email Fax Contact Phone Email Fax Date Tima Initials Contact Date Time Initials

> Ptione Email Fax Contact Time 7500 5513 85G3 7-2011\_version 1

Inittals

Date

Time

Initials

#### Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

#### Structure Types

A = Amosite	F = Fiber
An = Anthophyllite	B = Bundle
C = Chrysotile	C = Cluster
Cr = Crocidolite	M = Matrix
T = Tremolite	

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

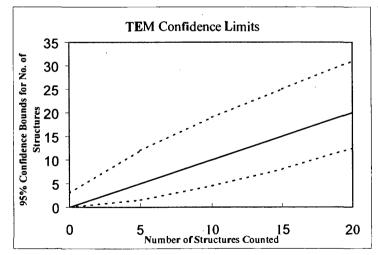
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N (S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mn)2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	"表现是我们

Client :	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	261
Date received by lab	2/22/12
Lab Job Number:	Z30284
Lab Sample Number:	867453

F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary filter used	
Total Resuspension Volume (mi)	· ·
Volume Applied to secondary filter (ml)	

Analyzed by	M
Analysis date	2/22/12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	WD LE
Counting mies (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsicns	Identification	Mineral Class				1 = y	es, blank	= no
Unid	Ond Opening	Туре	Primary	Total	Length	Width	Identinoation	Amohibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	45-3	M											·	
	F5-3	W			Pre	x A	70% mt	act -5%	debi	is			·	
	25-3	M			Pno	ев	801. int.	na ~560	cbris		lm/k 2/2	112		
	05-3	M												
	B5-3	M								<u> </u>				
B	H5-3	NO												
	G5-3	M												n .
	FS-3	M												
	45-3	MÓ			·			·						
						٠.								

#### Reservoirs Environmental, inc. TEM Asbestos Structure Count

Laboratory name:	REi
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification_	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 om
Scale: 1D =	0.056 um
Primary filter area (mm2)	888 -
Secondary Filter Area (mm2)	
QA Type	<b>建在梦幽默里</b> 的

Clienf:	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	947
Date received by lab	2/22/12
Lab Job Number:	2.30257
Lab Sample Number:	867454

F-Factor Calculation (Indirect Preps Only):			
Fraction of primary filter used			
Total Resuspension Volume (ml)			
Volume Applied to secondary filter (ml)			

Analyzed by	_B
Analysis date	2 23 7
Method (D=Oirect, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Glass				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H5-3	MD			=									
	G5-3	M				14.00	A	80/min	hut	3-	3% rebu	, 		. ·
	F5-3	MD					1	80 % ( W)	Int	3-9	- of delows			
	£5-3	WD												
	45-3	ND						-						
13	62-3				12	12	CD		<b>V</b>		-7/4			
	F2-3	ND												
	EZ-3	ND					<u></u>	B.	2/23/	12				
	CZ-3	ND						/1	/ /					
								· .						

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	ALTRE TO
Instrument	JEOL 100 CX /N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area	385
Secondary Filter Area (mm2)	HIM HALL
QA Type	推計的構築和

Client:	R+R.
Samole Type (A=Air, D=Dust):	A 10
Airvolume (L) or dust area (cm2)	270
Date received by lab	2/22/14
Lab Job Number:	<b>23025</b> 并
Lab Sample Number:	8 G 7455

Fraction of primary filter used	,	
Total Resuspension Volume (ml)	·	
Volums Applied to secondary filter		

	1. 0.17 (48 0/40, 0.11.13)
Analyzed by	395
Analysis date	22372
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	 Mineral Class				1 = y	es, blank	= no
Gild	Gild Opening	Туре	Primary	Total	Length	Width	·	Amohlbole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	633	M												
	H3-3	MD			,	Pma	A 8	O/mh	£,	3-5	% Jebus		٠	
	H3-3	NO				Pro	B 5	O'mbu	1	3~5	% debus			
	F3-3	ND			,	,								
	E3-3	W						Sh						
B	14-6	NO		•				45	2/23	3/12				
	K4-6	MD						//	/	<u></u>				
	14-6	M						,						
	(944	MD						:						
	F4-10	WO				2								

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI TO
Instrument	JEOL 100 CX (b) S
Voltage (KV)	100 KV
Magnification	20KX) IOKX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.058 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	語言語語
QA Type	"

Client :	R+R
Sample Tyoe (A=Air, D=Dust):	A Part
Air volume (L) or dust area (cm2)	957
Date received by lab	2/22/12
Lab Job Number:	Z302.5H
Lab Sample Number:	867150

F-Factor Calculation (Indirect Preps Only):						
Fraction of primary filter used	,					
Total Resuspension Volume (mi)						
Volums Applied to secondary tilter (ml)						

Analyzed by	1576
Analysis date	Z/23/12
Method (D=Oirec(, I=IndIrect, IA=IndIrect, ashed)	SAD SEE
Counting rules (ISO, AHERA, ASTM)	ALTE
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	:= no
	One Opening	Туре	Primary	Total	Length	Width		Amphibole	c	NAM	Sketch/Comments	Sketch	Photo	EDS
A	6-4-4	MD												
	FUM	M				Pas	A 8	50/mmh	4	5	-10/ de	bus		
· 	E4-4	ND				Pu	136	0%.sh	1	5	10% let	n		
_	K3-1	W				(1			1	ļ				
	H3-1	ND						4	B 2	23/	2		·	
B	K3-6	MD							,	/				
	H3-6	ND					1							
	63-6	ND						·						
	F3-6	MD						<u> </u>						
						,					<u>:</u>			

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



February 24, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report:

RES 230328-1

Project # / P.O. #
Project Description:

None Given 3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 230328-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 230328-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP February 23, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

February 24, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	ID Ni	ID Number Analyz		nalyzed Volume Sampled		Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-022212 W	EM	867882	0.0900	930	ND	0.0046	BAS	BAS
3W-022212 N	EM	86788 <b>3</b>	0.0900	930	ND	0.0046	BAS	BAS
3W-022212 E	EM	867884	0.1000	8 <b>2</b> 7	ND	0.0047	BAS	BAS
3W-022212 S	EM	867885	0.0900	9 <b>2</b> 7	ND	0.0046	BAS	BAŞ

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

DATA QA

Due Date: 2-24-12

Due Time: 905

## REILAE RESERVOIFS ENVIRONMENTAL, INC. 8001 Logm St Denver, CO 80216 • Phr. 303 854-1988 • Fax 303-477-4275 • Toll Face :896 RESI-ENV

Page \_\_1\_\_ of \_\_\_\_

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L'ile traditor manufact	Address:					Phone:									Phone:						
11 W 10003 2						Fec								Fex:							
Sandy W. 84070						Cell/pager:									Vpager:						
Project Number end for P.O. #:	J						a Delivi	vebie i	Emell /	Address	:	<u> </u>									
Project Oescription/Location: 30' West Sub-RMP							014														
		1													_				<del></del>		TEO
ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pin PLM / PCM / (FEM) RUSH (Same Day) PRIDRIFY (Naxt Day	A CTANDARD	1 -	<del></del>	1	REQL	<u>JESI</u>	ED A	NAI	LYSI	S		<u> </u>	4-			MATI	RIX CC		1	AB NO	IES:
(Rush PCM - TEM = 6hr.)	y)STANDARD	1 1			1.	1 i	1 1		-1	11	11	1	-	Air	<u> </u>			lulk = B			
	<del> </del>	4 1							j			1		Dust				aint = P	+		
CHEMISTRY LABORATORY HOURS: Weekdays: Sam - Spm   Metal(s) / Ousi   RUSH 24 hr 3-5 Day	<u> Maraja - Bajara Majar</u>	4							- 1	i i			-	Soil		<del>  </del>		ipa = W			
	"Prior notification la	1 1	Quant,	1 1	-	)	H	] ]	اء	] ]		-	_	wab		$\overline{}$		= Food	<del>.  </del>		
RCRA 8 / Metals S Weldins RUSH S day10 day	required for RUSH	151		1 1	SS	1 1	ľľ		죑	11	11	ရှိ ဖ	Drink	na w	eter :			Waler = WV	<del>'</del>		
Drganics24 hr 3 day5 Day	tumerounds.**	Point Count	÷ Å	1 1	8		1 1		Quantil		$ \cdot $	NOTES	***	TILLE	1702	0=0		media only**			
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 9pi	n.; (New York York York)	2	8 8	1 1	Metals				ð	8 8	ا ـ ا	EN SE	—	7,101.0	1	T	ou wipe	T	+		
E.coll 0157:H7, Coliforms, S.aureus24 hr2 Day		[절	. 7402, ISO-Indir		Fume		11		ᄒᇶ	<b>₹</b>	ig.	- IE	ì			1		<b> </b>	-		
Salmonella, Listena, E.coll, APC, Y & M48 Hr3-5 Day		1 2	₹ 8	SH S	يًا اعِ			1 1:	李屬	Quantif	Ę	OR OTH	1	- 1							
1	_48 Hr 3 Day 5 Day	١	at at		\$ \ \[ \frac{2}{8} \]	1	;		텕	1 1 -	13	S S	1			1		{	<b> </b>		
**Turneround times establish a laboratory priority, subject to isboratory volume and a		╘	ξĘ	7400B,	Respirable yte(s)	目	÷ 6		န္ဓါင္စ	1 -	8	. Identi	۱.,								
apply for afterhours, weekends and holidays.**		8	\$ ₹		رِيرُّةً الْمَّا الْمُورِّةً الْمُ	Σ	<u>a</u> 6	÷	렆ㅣ	1 1 7	1	,∤ <b>≨</b>	Volume	1.	.   6	إ		ļ		3 35	A 18. 21
Special Instructions:	<u> </u>	Short report	- AHERA quant, Mic	7400A,	Total, Respirable  - Analyte(s)  TCLP, Welding F	83	8 5	إي	8		4	38 ₹		,   }	غ   <u>ق</u>	<u> </u>			EM I	lumber	(Laboreton
		$ \cdot $	' 7	1 . 1	ಿ   ೫ ≪	N.	Salmonella: +/- E.coll O157:H7:	Listerfa	Aerobic E.coli:	Coliforms:	\ 8   8	Mod:	8 3			ן רַנ	Date	Time		Use Or	
Client sample ID number (Sampla ID's must be unique	<b>)</b>	15	TEM Semi	PCM	METALS RCRA 8.	ORGANICS - METH	<u> </u>			OLOG		3	Sample	(a)	# Containers	Col	llected n/dd/yy	Collected		by E	
1 3W-022212 W	***	П	×	$\sqcap$		Ì			T	Π	П		93	) A	-	217	22/12		13	67	582
2 3W 027212 N			1						T				93					1.00	1	1	23
3 3w-021212 E			7	1. 1							1		82	1				1		1	27
13w-021712 S				11				11	1				92	7 1	1					1	85
5				11	+	$\dagger \dagger$		H	1		ft		\ <u> </u>	` `	+	1	Ψ'		1	<b>.</b>	
6		<del>                                     </del>	· · · · ·		7			11	+	<del>    -</del>	11	1	1-	+	+-	1	777	-	+	<del>- 1111</del>	
7	<del></del>	+	·	† †	<del>-  </del>	+-	+	1	+	+	†+	+	┪	+	╫	+		<del> </del>	+	<u> </u>	
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9					<del>-  </del>		-	╁┼		<del>                                     </del>	$\downarrow \downarrow$	+	1	-	+	<del> </del>		<del> </del>	-		<del></del>
10				lacksquare				Ш			Ш	1			1	1:	<u>.</u>	L		<u> </u>	·
	nal samples shall be listed on						-	_								_					
NOTE: REI will enelyze incoming samples based upon information received and will not be a analysis as indicated on this Chajn of Custody shall constitute an analytical services agreem														tive ag	rees (	iet subr	nission of	the following s	emples for	requested	1
Ballian Johns Bury / Kat Tab	Fed Ex			Detail	Time:	1/2	21	1								- 4101			0		
Relinquished By: /// Laboratory Use Only/	TEO IX			Date/	ııme:	<u> </u>	-11	<u>~</u>								ndition		On Ice	Sealed		act
Received By: Dat	re/Time: 22312 9	<u> </u>	<del>)</del>	5_	Carrie	r.±	ص		<u>~</u>					emp.	(-")			es / No	Yes / No	C105	s / No -
Results: Contact Phono Email Fax Date	Time Initi		Co	ntact			Phon	e Œn	nail)	Fax			Date				Tim	e	In	Itlais	
Contact Phone Email Fax Date	Time  nili	als	Co	ntact			Phon	e Eñ	nal I	Fax			Date				Tim	e	In	itiels	

Francisco # 7560 55/4/1844 7-2011\_version 1

#### **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

# Asbestos Type A = Amosite An = Anthophyllite C = Chrysotile Cr = Crocidolite T = Tremolite Structure Types F = Fiber B = Bundle C = Cluster M = Matrix

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

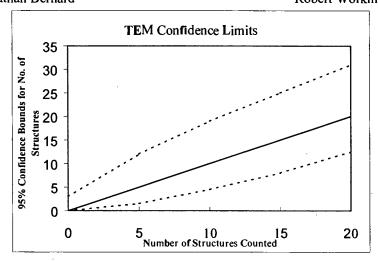
Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

## Reservoirs Environmental, Inc. TEM Ashestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	ZOKX POKX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.058 um
Primaly filter area (mm2)	365
Secondary Filter Area (mm2)	
QA Tyoe	

1207107000	ractare count
Client :	Rail
Samole Type (A=Alr, D=Dust):	A
Air volume (L) or dust area (cm2)	930
Date received by lab	2 23 12
Lab Job Number	230328
Lab Sample Number	867882

	Analysis date	1 2/24/12
	Method (D=Dlrect, l=Indirect, IA=Indirect, ashed)	I DEED
	Counting rules (ISO, AHERA, ASTM)	AH
	Grid storage location	Month Analyzed
	Scope Alignment	Date Analyzed
_		
l l		

Analyzed by

F-Factor Calculation (Indirect P	reps Only):							
raction of primary filter used								
Total Resuspension Volume (ml)								
Voluma Applied to secondary filter (ml)								

Grid	Grid Grid Opening		No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
Grid Grid Opening		Туре	Primary	Total	Length	Width		Amohibole	_с	NAM	Sketch/Comments	Sketch	Photo	EDS
A	63-4	ND												
	F3-4	MD				Pu		80% int	m f	_5	La delmi			
	E3-4	M				Pin	0B	50% int	uf	<u> </u>	Le debus			
	F5-	ND												
	E5-1	MD				<u>.</u>	10	2/24/12						
3	615-3	ND					7P	7-11-						
	F5-3	NÓ				/	(							
	E5-3	WD												
	C5-1	ND												
	·													

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory nama:	REI
Instrument	JEOL 100 CX (N) S
Vollage (KV)	100 KV
Magnification	(ZOKX ZOKX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 10 =	0.056 um
Primary filter area (mm2)	385
Secondary Fitter Area (mm2)	
QA Tyoe	

Rail
A
930
2 22 12
230328
867883

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	1513
Analysis date	2/24/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening Structure Type				Dimensions		Identification	Mineral Class				1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	_с	NAM	Sketch/Comments	Sketch	Photo	EDS
A	193-6	ND				_							-	
	F36	ND				Pm	A	80/0 m	Lout	2	% debri	U.		
	E3-6	ND.				Pun	6	60% in	mf		Je Jehry			
	C3-6	S							1	6				
	133-6	M							16	2/	24/12			
<u>B</u>	H3-1	ND		· ;					7	1	. '/ '			
	63-	M												
	F2-3	ND												
	ÉZ-3	ND												
				!										

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX/N) S
Voltage (KV)	100 KV
Magnification	(ZOKX-POKX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QА Туре	

Client :	Rail
Sample Type (A=Air, D=Dust):	A
Air yolume (L) or dust area (cm2)	829
Date received by lab	2 22 12
Lab Job Number:	230328
Lab Sample Number:	867884

Scope Alignment	Date Analyzed
Grid storage location	Month Analyzed
Counting rules (ISO, AHERA, ASTM)	AH
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	F/D
Analysis date	2/24/12
Analyzed by	JB

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no
	Ond Opening	Туре	Primaty	Totat	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H2-6	ND												
	62-6	M				Pm	A	80 ho.	2 Am	f	5% deh	∠' c		
	F2-6	M				Pur	3	70 /0 m	Lust	, 	5% Joh	115 115		
	E2-6	M							4					ļ
	F3-6	ND						1	8	2/24	12			
6	1+3-4	M								7 7				
	613-4	ND									·			
	G2-1	MD						,						
	F2-1	ND_						·						
	E2-1	MO						_						

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

	and discount of the best of the ex-
l charatas, nama:	REI
Laboratory name:	
	JEOL 100 CX (N) S
instrument	JEOt. too CX /NIES
	Control of the Contro
Voltage (KV)	180 KV
	Land in the second second second
Magnification	20KX TOKX
	2010/21010
Grid opening area	
(mm2)	0.011
	Arragante a narodistributa Marie
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
	0.000 0111
Primary filtar area	<b>一种形式的现在分词的现在分词</b>
(mm2)	38S
Secondary Filter Area	TO PROCEED AND AND SHEET AND
(mm2)	一步的流淌。在自己的特殊的
, , , , , , , , , , , , , , , , , , ,	The street of the street of the street of
QA Type	

	netnia Coniit
Client :	Rul
  Sample Tyoe (A=Air, D≠Dust):	A
Air volume (L) or dust area (cm2)	927
Date received by lab	2 23 12
Lab Job Numben_	230328
Lab Sample Number:	867885

F-Factor Calculation (Indirect Preps O	nly):
Fraction of primary lilter used	
Total Resuspension Volume (mi)	
Volume Applied to secondary filler (ml)	

IA=Indirect, ashed) Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	mctures	Dimer	nsions	Identification	Identification Mineral Class			1 = y	es, blank	= no	
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H34	ND												
	6134	MD				(	in A	80% in	hut		5-110/ let	ns		i
	F3-4	MD				(-	200	50 % in	Inst		5-10% deh	15	`	
	E3-4	ND					. <b>V</b> =							
·	C34	NO							16		1			
B	45-1	M							1-7	2/	24/12			
	145-1	ND												
	H5-1	ND												
	65-1	ND									·			
							,	·						

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### Equations Used for Calculations

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration, s/cc =  $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{\text{It.}}{\text{1000cc}}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



February 27, 2012

Laboratory Code: Subcontract Numben RES NA

Laboratory Report: Project # / P.O. #

RES 230398-1 None Given

Project Description:

3rd West Sub - RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed In general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 230398-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described In this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 230398-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

February 24, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

February 24, 2012

Client ID Number	Lab ID Ni	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
•			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-022312 W	EM	868464	0.0800	968	ND	0.0050	BAS	BAS
3W-022312 N	EM	868465	0.080.0	968	ND	0.0050	BAS	BAS
3W-022312 E	EM	868466	0.0800	970	1	0.0050	0.0050	<b>12</b> .5
3W-022312 S	EM	868467	0.0900	961	ND	0.0045	BAS	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE II. SUMMARY OF ANALYTICAL DATA

**RES Job Number:** 

RES 230398-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

February 24, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

February 24, 2012

Client	Lab		Asbestos					Structures	**Excluded	Asbestos
ID Number	ID Number Mineral						>5 Microns	Structures	Structures	
				Asi	bestos Stri	stos Structure Types*				for
			•	Fibers	Bundles	Clusters	Matrices			Concentration
3W-022312 W	EM	868464	ND	0	0	0	0	0	0	0
3W-022312 N	EM	868465	ND	0	0	0	0	0	0	. 0
3W-022312 E	EM	868466	Ctrysotile	1	0	0	0	0	0	1
3W-022312 S	EM	868467	ND	0	0	0	0	0	0	0

<sup>\*</sup>See Analytical Procedure for definitions

<sup>\*\*</sup>C = Excluded from total due to lack of confirmation

<sup>\*\*</sup>L = Excluded from total for length less than 0.5 micron (AHERA only)
\*\*A = Excluded from total due to i ncorrect aspect ratio

ND = None Detected

Due Date: 2-25(2 Due Time: 85

## RESILAE RESERVIES ENVIRONMENTAL, INC... 8801 Lagan St. Lienvisr, CO St(210 + Ptr 303 964-1666 + Fax 303-477-4275 + Toli Free :866 RESI-ENV

Pager: 303-509-2098 **CONTACT INFORMATION:** INVOICE TO: (IF DIFFERENT) Company: ompany: 29R Environ member Address: bone. 47W 90005 #2 ax: Sandy Ut. 34070 Col/pager roject Numbor and/or P.O. #: Project Description/Location: 32 West deve @ Merenjo com Sub - KMD REQUESTED ANALYSIS VALID MATRIX CODES LAB NOTES: ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm RUSH (Same Day) K PRIORITY (Next Day) \_STANDARD PLM / PCM (TEN) AIr = ABuk = B (Rush PCM = 2hr, TEM = 6hr.) Dust = D Paint = P 22702 CHEMISTRY LABORATORY HOURS: Weekdays: Sam - Spm Soil = S Wipe = W RUSH 24 hr. 3-5 Day Swab = SW F = Food Metat(s) / Dust "Prior notification is Drinking Water - DW Waste Water - VVVV RCRA B / Metals & Welding Point Count required for RUSH RUSH \_\_\_ 5 day \_\_\_ 10 day Fume Scan / TCLP O = Other ¥ g turnarounds.\*\* "ASTM E1792 approved wipe media only" 24 hr. \_\_\_ 3 day \_\_\_ \$ Day Organics 8 MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 9pm 24 hr. 2 Day E.coli O157;H7, Coliforms, S.aureus - 7400A, 7400B, OSHA 48 Hr. \_\_\_3-5 Day Salmonella, Listeria, E.coll, APC, Y & M Mold RUSH 24 Hr \_\_48 Hr \_\_\_3 Day \_\_\_5 Day "Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional feet apply for afterhoure, weekende and holidays." Matrix Code Short Special Instructions: EM Number (Laboratory Date Time Use Only) Collected Collected ē Client sample ID number (Sample ID's must be unique) MCROBIOLO 8Y ah/mm s/o 968 920 (Additional samples shall be listed on attached long form.) NOTE: REI will analyze incoming samples based upol Inflormation received and wif not be responsible for enors or omissions in calculations resulting from the inaccuracy of original data. By signify ellacticompany representative agrees that individuals on of the following samples for requested analysis as indicated on this Chap of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in e 1.5% monthly interest surcharge. Date/Time: 423 Sample Condition: Relinquished By: On Ice Sealed Intact Laboratory Use Only Temp. (F°) Yes / No Yes / No (Yes) tia Date/Time: Date/Carrier Received By Dale 22712 Results: Contact (1) AVE Date 2 / 24 Time 10:15 Initials (Contact Phone Email Fax Time\_ Phone Email Fax Phone Email Fax Date Contact Phone Email Fax Time Contact Date Time Initials 4.7502 6522 3237

7-2011\_version 1

## **Attachment I**

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

## <u>Asbestos Type</u> <u>Structure Types</u>

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

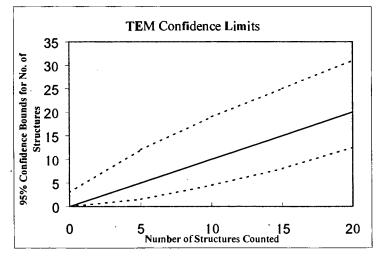
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
instrument	JEOL 100 CX N
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	388
Secondary Filter Area (mm2)	<b>《《公司》</b>
QA Type	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1

Client :	RIP
Sample Tyoe (A=Air, D=Dust):	A
Air yolume (L) or dust area (cm2)	968
Date received by lab	12/24/12
Lab Job Number:	23039e
Lab Sample Number.	868468

Scope Alignment	Date Analyzed
Grid storage location	Month Analyzed
Counting rules (ISO, AHERA, ASTM)	AH
Method (D=Oirect, I=Indirect, IA=Indirect, ashed)	P
Analysis date	2/84/12
Analyzed by	W

F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary fitter used	
Total Resuspension Votums (mi)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No, of St	ructures	Dime	nsions	Identification	Mineral Class				1 = yes, blank ⊐ no			
Olid	Grid Opening	Туре	Primary	Total	Lenoth	Width	Identinication	Amphibole	С	NAM	Sketct/Comments		Photo	EOS	
A	46-4	M						·							
	F6-4	M				Prev	A 72	(What 5.	70	date	nis				
	86-4	M				Inex	But	(whach 5.	li-	Jru,	1/2_				
	C6-4	ND						<i>V</i>		V 1					
0	H6-6	M							·						
	966	M													
	F66	M													
	206	2						·							
					<i>.</i> ·										

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tvoe	

Client :	RIP
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	968
Date received by lab	2/24/12
Lab Job Number	230398
Lab Sample Number	86846X

Analyzed by	-OK
Analysis date	2/24/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	12
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	<del>                                     </del>

Grid	Grid Opening	Structure	No. of St	ructures	Dime	Dimensions Identification		Mineral Class	Mineral Class			1 = yes, blank = no		
GIA GII	Grid Opening	Туре	Primary	Total	Length	Width	identinoation	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	95-6	M							<u></u>					
	P5-6	M				Pres	A 907	> (Wacs :	52.	leb 1	<u>ک</u>			
<del></del>	25-6	ND				Prese	BA	Sell	1c 2	124	112			
	C5-6	M		<u></u>						/ "				
B	H4-6	M								,				
	G4-6	M				,								
	F4-6	M								, . <u></u>				
	C5-4	N												
		•												

## Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N &
Voltage (KV)	100 KV
Magnification	26KX 10KX
Grkl opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D=	0.056 um
Primary filter area (mm2)	365
Secondary Fitter Area (mm2)	
QA Type	

Client :	RIP
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	570
Date received by lab	2/24/12
Lab Job Number:	230398
Lab Sample Number:	868466

Fraction of pdmary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	<del> </del>

Analyzed by	M
Analysis date	2/24/12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	2
Counting miles (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = yes, blank = no		
		Туре	Primary	Total	Length	Width	-	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	F3-6	M								,	,			
	23-6	NO			()n	er A	80), W	acs ust	det	r's_		_		
	(3-4	MQ			1	n B		Jenfle	~_ 2	1241	را			
	33-6	MO								·				
5	45-3	M												
	F5-3	NO												
	25-3	F		l	9,5	1	CD		_					
	C5-3	120												
	·									·				

#### Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grld opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: ID =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

PFR
A
1961
2/24/12
2303.98
868467

F-Factor Calculation (Indirect Pr	eps Only):
Fmctkm of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (mi)	

Analyzed by	Me
Analysis date	2/24/12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	$\mathbf{C}$
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width	Ta Griding action	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	94-4	M												
	F4-4	M				Pro	r A 90	(ntact	50	debri	2.			
	E4-4	M				Prep	BA	1.00 /h	2/1	4/12	_			
	24-6	m												
	C46	M												
B	H4-4	M											·	
	94-4	M												!
	FU-4	M										_		
	eyy	3												
										·				

#### Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### Equations Used for Calculations

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\text{\# Astestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$ 

Filter loading, s/mm<sup>2</sup> = # Asbestos structures Area Analyzed (mm<sup>2</sup>)

GO = TEM grid opening



February 28, 2012

Laboratory Code:

RES NA

Subcontract Number: Laboratory Report:

RES 230511-1 None Given

Project # / P.O. #
Project Description:

3rd West Sub - RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 230511-1 Is the job number assigned to this study. This report Is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described In this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except In full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

**RES Job Number:** 

RES 230511-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

February 27, 2012

Analysis Type:

TEM, AHERA 24 Hour

Turnaround: Date Samples Analyzed:

February 28, 2012

Client ID Number	Lab ID Ni	umber	Area Analyzed	Air Volume Sampled	Number of Astrest os Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-022412 W	EM	869219	0.0900	889	ND	0.0048	BAS	BAS
3W-022412 N	ЕМ	869220	0.0900	894	ND	0.0048	BAS	BAS
3W-022412 E	EM	869221	0.0900	893	ND	0.0048	BAS	BAS
3W-022412 S	EM	869222	0.0900	889	ND	0.0048	BAS	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm<sup>2</sup> = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

#### RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

#### TABLE II. SUMMARY OF ANALYTICAL DATA

RES Job Number:

RES 230511-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

February 27, 2012

TEM, AHERA

Analysis Type:

Turnaround:

3W-022412 S

Date Samples Analyzed:

24 Hour February 28, 2012

Client  D Number	Lab ID Nu	mber	Asbestos Mineral	Asl	pestos Str	ucture Typ	es*	Structures >5 Microns in Length	**Excluded Structures		sbestos uctures for
				Fibers	Bundles	Clusters	Matrices			Concer	ntration
3W-022412 W	ĖM	869219	ND	0	0	0	0	0	0		0
3W-022412 N	EM	869220	ND	0	0	0	0	0	0		0
3W-022412 É	EM	869221	ND	0	0	0	0	0	0		0

0

0

0

0

0

0

0

EM

869222

ND

<sup>\*</sup>See Analytical Procedure for definitions

<sup>\*\*</sup>C = Excluded from total due to lack of confirmation

<sup>\*\*</sup>L = Excluded from total for length less than 0.5 micron (AHERA only)

<sup>\*\*</sup>A = Excluded from total due to i ncorrect aspect ratio

ND = None Detected

Due Date: 2 28 12 Due Time: 100

# Reservoirs Environmental, Inc. Seot Logon SL Denver, CO 80218 - Ph; 303 964-1988 - Fex 303-477-4276 - Toll Free :886 RESI-ENV Pager : 303-409-3098

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Page	1	of
	<del></del> _	UF

	INVOICE TO: (IF			NT)								1		CON	ITAC'	ΓIN	FOR	MATI	ON:				
Company: R. F. R. Grussonmental	Company:					Con	act D	u.R.	20	Skol	100	<u> </u>					Conte						
Address: 47 W 90005 \$2	Address:		•			Contact Dave Roskelley Phone:											Phone:						
Sandy Ut. 84070						Fax:											Fax						
								801				2					CelVp	agSn					
Project Number and/or P.Q. #:							I Data C																
Project Description/Location: 35 West Sub- RMP							daw	0	<u>m2</u>	w/	<u>10.0</u>	or								,			
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PLM / PCM / EM RUSH (Same Day) PRIORITY (Next Day	y)STANDARD	T					T	TI		П	Т			$\neg$	7	\ir =	A	1	Bi	ulk = B	T		
(Rush PCM = 2hr, TEM = 6hr.)		1		1 1									-	- [	D	ust =	: D		Pε	int = P			
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm	<u> Pakkobal beraklah kecahan</u>	1		1 1			- 1						-		S	oll =	S		Wi	p <b>e</b> = W			
Metal(s) / Dust RUSH 24 hr 3-5 Day	**Prior notification la	Į.	녍	11				11	_	П	- [	lι		L		ab =				= Food			
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Organics 24 hr 3 day 5 Day	turnerounds.**	Point Count	+ Props	1 1		Medals Scan	- [	11	Quantification		1	,	OR OTHER NOTES	-				) = Oth		media only**	<b>├</b> ──		
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6p	🔐 Marka Kalanda Ara	<b>₹</b>	8 58	1 1		Meta	-		(ð	$\cup$	ទ្ធី ទ្ធ		E S	⊢	-AST	M E1.	/92B	pproved	wipe	media only	<del> </del> -		
E.coll O157:H7, Coliforms, S.aureus24 hr2 Day		뒿	성률	141			ļ		১	ş	2 2	퇾	기밀	- }			\		-		<b></b>		
Salmonella, Listeria, E.coli, APC, Y & M48 Hr3-5 Da		1 20	≨å	OSHA	象	rte(s) Welding Fume,	- 1	11	‡	[월]		튙.	0 2	- [							<b></b> -		
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apply for afterhours, weekends and holidays.**		]	\$ ₹	8		A H	¥   §	157	¥ 18	-	+ بناؤة	÷ .	. Z		Volume	0	2				14. 14. 2		
Special Instructions:		i i	AHERA lant, Mix	7400A,	- Total,	اکری	Samoneta +/-	E col 0157:H7:	Listeria: Aerobic	ا پ	Ĕ   Ĕ	ž,		-	Š a	Code	# Containers	· 			EM No	ımber (Labo	oratory
		] 📜	- <u>5</u>	1 - 1	12	METALS RCRA 8.	3 3	Ш 8	Aerob	E S	3 8	7 ×		- 1	Sample V (L) / Area	Matrix	ğ	Dal Collec	- 1	Time Collected		Use Only)	
Client sample ID number (Sample ID's must be unique	e)	Ş	Sem	¥0.4	DUST	R C	ĕ	ı	MCR	OBIO	LOGY		_3	_	S E	βa	#	nvn/de		hhymm s/p	1000		
13W-022412W			×	ΙT			T		T		Τ	П		7	६३९	A		2/24	12		810	9215	
2 3W 072412 M						gr: 30									894				3.7			20	
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## Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

#### Asbestos Type

#### Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

#### Sizing Conversion

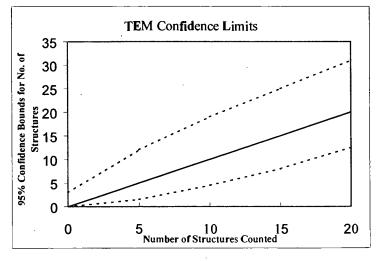
1 length unit = 5 mm on screen = 0.278 micron 1.80 length units = 0.5 micron

18.0 length units = 0.5 micron 18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

#### **TEM Analysts**

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX/N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28.um
Scale: 1D =	0.056 tim
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	859
Date received by lab	2 27 2
Lab Job Number:	230511
Lab Sample Number:	809219

Analyzed by	JB
Analysis date	2/28/17
Method (D=Direct, l=Indlrect, IA=Indlrect, astied)	70
Counting nules (ISO, AHERA, ASTM)	AH
Grid storage location	Mo₁ith Arialyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pi	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (mi)	
Volume Applied to secondary filter (mf)	

Grid	Grid Opening	Structure	No. of St	ructures	Dimensions		Dimensions		Dimensions		Dimensions		Dimensions		Dimensions		Identification	Mineral Class				1 = yes, blank = no		
0.1.4	Ond oponing	Туре	Primary	Total	Length	Width	ide/itilidation	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS										
A	H4-1	ND																						
	64-1	ND						·						L										
	F4-1	ND					A+19	~ 60%	int	not	3-5	lo de	pri	<u> </u> 										
	F3-6	M							4					<u></u>										
	E3-6	M							B	2/28	/12													
B	45-6	ND								/ /														
	656	ND																						
	F5-6	ND																						
	E5-6	ND									,													

#### Reservoirs Environmental, Inc. TEM Asbeatoa Structure Coont

Laboratory name:	REI
Instmment	JEOL 100 CX/N) S
Voltage (KV)	100 KV
Magnification	20100 10100
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.058 um
Primary filter area (mm2)	385
Secondary Fitter Area (mm2)	
QA Tvpe	

Client :	RR
Sample Type (A=Alr, D=Dust):	A
Air volume (L) or dust area (cm2)	894
Date received by lab	2/27/2
Lab Job Number:	23051
Lab Sample Number:	\$ 64 2.20°

Analyzed by	JB
Analysis date	2/28/17
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Aff
Grid storage location	Mdnth Arialyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspension Volumo (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mineral Class	,			1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole	_c_	NAM	Sketch/Comments	Sketch	Photo	EDS
A	F5-4	MD								!				
	E5-4	M			f	/ mp	1 80	Lumber	-	3-	2/0 de p11	S		
	15-4	ND			P	N	360	of inter		3-5	- la la bu			
	B5-4	ND						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	16	•				
	A5-4	ND							46	21	8/2			
B	K3-3	M						·	1					
	H3-3	ND							1		·			
	(3-3	ND												
	F3-3	M												
										·				

Page	1	of		

# Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX/N) S
Voltage (KV)	100 KV
Magnification	(20)0V 10KX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RR
Sample Type (A=Air, D≠Dust):	A
Air volume (L) or dust area (cm2)	893
Date received by lab	2 27 2
Lab Job Number:	230511
Lab Sample Number:	84221

Analyzed by	318
Analysis date	2/28/17
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting mles (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary filter used	
Total Resuspension Volume (mi)	1
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			1 = ves, blank = no			
			Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	643	MD				<u>.</u>		 		! !				
	F4-3	A/D				Pin		80%.	Las	4	5% Jehn	مع		
	E4-3	ND_				Pina	3	-60%	orto	1	5% dela	5		
	B4-3	ND												
	C4-3	NO						1B 2/2	8/12					
B	K5-4	MD							7					
	1+5-4	ND												
	65-4	ND												
	F5-4	2												
								·						

# Reservoirs Environmental, Inc. TEM Aspestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX/N)S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	2000 3000
QA Type	

RR
SA PER
881
2 27 2
230571
819222

Analyzed by	JB
Analysis date	2/28/17
Method (D=Direct, I=Indirect, IA=Indirect, IA=Indirect, ashed)	/D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary fillar used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (mi)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class				1 = yes, blank = no		
			Primary	Total	Length	Width	TOOTKIIIOAKIOII	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	45-1	ND												-
	K5-1	ND			P	W.	A 5	10 heinh	mA	3-2	Lo de bus			
	145-1	ND			R	2	B 9	O Lunh	of	3-5	% de brs			
Ì	G15-1	ND							2					
	F5-1	ND							2	28/1	2			
B	H5-1	ND						77	/	/				
	615-1	ND						7						
	F5-1	M		·	,	<u></u>								
	E5-1	M												
					,									

#### Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definifion given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50<sup>th</sup> structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be uneyenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

#### **Equations Used for Calculations**

Area Analyzed, mm<sup>2</sup> = # GO counted x Average GO Area (mm)

Concentration,  $s/cc = \frac{\text{\# Asbcstos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$ 

Filter loading,  $s/mm^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2)}$ 

GO = TEM grid opening